

## AMENDMENTS

### Amendments To The Claims:

Please amend the claims as follows:

Claims 1 - 328. Canceled.

1        329. (Currently amended) A water-based drilling fluid comprising:  
2              an aqueous base;  
3              about 7.5 lb./bbl. water soluble polymer; and,  
4              about 2 lb./bbl. of a-surfactantsurfactant in association with said water soluble  
5              polymer;  
6              wherein said water soluble polymer, said surfactant, and said association provide  
7              said water- based drilling fluid with effective rheology and fluid loss  
8              control properties comprising low shear viscosity.

1        330. (Previously presented) The water-based drilling fluid of claim 329  
2        wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether  
3        sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers,  
4        and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts  
5        thereof, and combinations thereof.

331. (Previously presented) The water-based drilling fluid of claim 329  
wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl  
ether sulfates.

332. (Previously presented) The water-based drilling fluid of claim 329  
wherein said surfactant comprises an alkyl ether sulfate.

333. (Previously presented) The water-based drilling fluid of claim 329 wherein said surfactant is sodium tridecyl ether sulfate.

334. (Currently amended) The water-based drilling fluid of claim 329 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

335. (Currently amended) The water-based drilling fluid of claim 329 wherein said low shear rate viscosity is of about 100,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

336. (Currently amended) The water-based drilling fluid of claim 331 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

337. (Currently amended) The water-based drilling fluid of claim 332 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

338. (Currently amended) The water-based drilling fluid of claim 333 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

- 1        339. (Previously presented) The water-based drilling fluid of claim 329 further comprising a concentration of non-toxic water emulsifiable material as an internal phase.
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340. (Previously presented) The water-based drilling fluid of claim 339 wherein said concentration is from about 2 to about 20 vol.%.

341. (Previously presented) The water-based drilling fluid of claim 329 wherein said fluid consists essentially of additives other a solid bridging agent.

342. (Previously presented) The water-based drilling fluid of claim 331 wherein said fluid consists essentially of additives other than a solid bridging agent.

343. (Previously presented) The water-based drilling fluid of claim 334 wherein said fluid consists essentially of additives other than a solid bridging agent.

344. (Previously presented) The water-based drilling fluid of claim 336 wherein said fluid consists essentially of additives other than a solid bridging agent.

345. (Previously presented) The water-based drilling fluid of claim 337 wherein said fluid consists essentially of additives other than a solid bridging agent.

346. (Currently amended) The water-based drilling fluid of claim 329 wherein said effective fluid loss control properties is a fluid losscomprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

347. (Currently amended) The water-based drilling fluid of claim 341 wherein said effective fluid loss control properties is a fluid losscomprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

348. (Currently amended) The water-based drilling fluid of claim 342 wherein said effective fluid loss control properties is a fluid losscomprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

349. (Previously presented) The water-based drilling fluid of claim 329 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

350. (Previously presented) The water-based drilling fluid of claim 341 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

351. (Previously presented) The water-based drilling fluid of claim 344 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

352. (Previously presented) The water based drilling fluid of claim 329 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

353. (Previously presented) The water based drilling fluid of claim 352 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

354. (Previously presented) The water based drilling fluid of claim 341 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

355. (Previously presented) The water based drilling fluid of claim 354 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

356. (Previously presented) The water based drilling fluid of claim 346 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

357. (Previously presented) The water based drilling fluid of claim 356 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

358. (Previously presented) The water-based drilling fluid of claim 351 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about 500,000 to about 2,500,000.

359. (Previously presented) The water-based drilling fluid of any of claims 351 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about from about 700,000 to about 1,200,000.

360. (Previously presented) The water-based drilling fluid of claim 351 wherein said water-soluble polymer comprises xanthan polysaccharides.

361. (Previously presented) The water-based drilling fluid of claim 351 wherein said water soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000.

362. (Previously presented) The water-based drilling fluid of claim 351 wherein said water soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 600,000 to about 1,000,000.

363. (Previously presented) The water-based drilling fluid of claim 361 wherein said synthetically modified starches comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

364. (Previously presented) The water-based drilling fluid of claim 358 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

365. (Currently amended) The water-based drilling fluid of claim 329 wherein said water soluble polymer comprises 50/50 wt.% XAN-PLEX<sup>TM</sup>-D and BIOLOSE<sup>TM</sup> modified xanthan polysaccharide and synthetically modified starch.

366. (Currently amended) The water-based drilling fluid of claim 331 wherein said water soluble polymer comprises 50/50 wt.% XAN-PLEX<sup>TM</sup>-D and BIOLOSE<sup>TM</sup> modified xanthan polysaccharide and synthetically modified starch.

367. (Currently amended) The water-based drilling fluid of claim 341 wherein said water soluble polymer comprises 50/50 wt.% ~~XAN-PLEX™-D and BIOLOSE™~~  
modified xanthan polysaccharide and synthetically modified starch.

368. (Currently amended) The water-based drilling fluid of claim 344 wherein said water soluble polymer comprises 50/50 wt.% ~~XAN-PLEX™-D and BIOLOSE™~~  
modified xanthan polysaccharide and synthetically modified starch.

369. (Currently amended) The water-based drilling fluid of claim 345 wherein said water soluble polymer comprises 50/50 wt.% ~~XAN-PLEX™-D and BIOLOSE™~~  
modified xanthan polysaccharide and synthetically modified starch.

370. (Currently amended) A water-based drilling fluid comprising:

about 7.5 lb./bbl. water soluble polymer;

about 2 lb./bbl. of a surfactant in association with said water soluble polymer; and

a concentration of a non-toxic water emulsifiable material as an internal phase;  
wherein said water soluble polymer, said surfactant, and said association provide  
said water- based drilling fluid with effective rheology and fluid loss  
control properties comprising low shear viscosity.

371. (Previously presented) The water-based drilling fluid of claim 370  
wherein said surfactant is sodium tridecyl ether sulfate.

372. (Previously presented) The water-based drilling fluid of claim 370  
wherein said water soluble polymer is selected from the group consisting of water soluble  
starches and modified versions thereof, water-soluble polysaccharides and modified

versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

373. (Previously presented) The water-based drilling fluid of claim 371 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

374. (Previously presented) The water-based drilling fluid of claim 371 wherein said water soluble polymer is a combination comprising from about 40 to about 60 wt.% of a xanthan polysaccharide and about from about 40 to about 60 wt.% synthetically modified starch comprising one or more functional groups selected from the group consisting of carboxymethyl, propylene glycol, and epichlorohydrin functional groups.

375. (Previously presented) The water-based drilling fluid of claim 371 wherein said water soluble polymer is a combination comprising about 50 wt.% xanthan polysaccharide and about 50 wt.% synthetically modified starch comprising one or more functional groups selected from the group consisting of carboxymethyl, propylene glycol, and epichlorohydrin functional groups.

376. (Previously presented) A water-based drilling fluid comprising:  
an aqueous base;  
about 7.5 lb./bbl. of water soluble polymer comprising a combination of about 50 wt.% xanthan polysaccharide and about 50 wt.% synthetically modified

starch comprising one or more functional groups selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin functional group;

about 2 lb./bbl. sodium tridecyl ether sulfate;

wherein said water soluble polymer, said surfactant, and said association provide said water-based drilling fluid with effective rheology and fluid loss control properties comprising low shear rate viscosity; and

wherein said water-based fluid consists essentially of additives other than solid bridging agents.

377. (Previously presented) The water based drilling fluid of claim 376 further comprising a concentration of a non-toxic water emulsifiable material as an internal phase.

378. (Previously presented) The water-based drilling fluid of claim 377 wherein said non-toxic water emulsifiable material is a water insoluble material selected from the group consisting of olefins, paraffins, water insoluble glycols, water insoluble esters, water insoluble Fischer-Tropsch reaction products, and combinations thereof.

379. (Previously presented) The water-based drilling fluid of claim 376 further comprising an alkali metal salt of a compound selected from the group consisting of a thiosulfate and a thiosulfonate.

380. (Previously presented) The water-based drilling fluid of claim 377 further comprising an alkali metal salt of a compound selected from the group consisting of a thiosulfate and a thiosulfonate.

381. (Currently amended) The water-based drilling fluid of claim 376 wherein said water soluble polymer comprises 50/50 wt.% XAN-PLEX<sup>TM</sup>-D and BIOLOSE<sup>TM</sup> modified xanthan polysaccharide and synthetically modified starch.

382. (Currently amended) The water-based drilling fluid of claim 377 wherein said water soluble polymer comprises 50/50 wt.% XAN-PLEX<sup>TM</sup>-D and BIOLOSE<sup>TM</sup> modified xanthan polysaccharide and synthetically modified starch.

383. (Currently amended) The water-based drilling fluid of claim 379 wherein said water soluble polymer comprises 50/50 wt.% XAN-PLEX<sup>TM</sup>-D and BIOLOSE<sup>TM</sup> modified xanthan polysaccharide and synthetically modified starch.

384. (Currently amended) The water-based drilling fluid of claim 380 wherein said water soluble polymer comprises 50/50 wt.% XAN-PLEX<sup>TM</sup>-D and BIOLOSE<sup>TM</sup> modified xanthan polysaccharide and synthetically modified starch.

385. (Currently amended) The water-based drilling fluid of claim 376 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

386. (Currently amended) The water-based drilling fluid of claim 377 wherein said low shear rate viscosity is of about 100,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

387. (Currently amended) The water-based drilling fluid of claim 378 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

388. (Currently amended) The water-based drilling fluid of claim 379 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

389. (Currently amended) The water-based drilling fluid of claim 380 wherein said low shear rate viscosity is of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

390. (Previously presented) The water-based drilling fluid of claim 377 wherein said concentration is from about 2 to about 20 vol.%.

391. (Currently amended) The water-based drilling fluid of claim 390 wherein said effective fluid loss control properties is ~~a fluid loss~~comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

Claims 392-412. Canceled.

413. (New) A water-based drilling fluid comprising:

an aqueous base comprising a concentration of about 20 vol.% or less non-toxic

water emulsifiable material as an internal phase;

a quantity of water soluble polymer; and,

an amount of surfactant in association with said water soluble polymer;

wherein said quantity, said amount, and said association provide said water based

drilling fluid with effective rheology and fluid loss control properties.

414. (New) The water-based drilling fluid of claim 413 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising

about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

415. (New) The water-based drilling fluid of claim 413 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising about 100,000 cP or more upon exposure to 0.3 rpm , measured with a Brookfield viscometer at 75 °F.

416. (New) The water-based drilling fluid of claim 413 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

417. (New) The water-based drilling fluid of claim 413 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

418. (New) The water-based drilling fluid of claim 413 wherein said surfactant comprises an alkyl ether sulfate.

419. (New) The water-based drilling fluid of claim 414 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

420. (New) The water-based drilling fluid of claim 414 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

421. (New) The water-based drilling fluid of claim 414 wherein said surfactant comprises an alkyl ether sulfate.

422. (New) The water-based drilling fluid of claim 414 wherein said fluid consists essentially of additives other than a solid bridging agent.

423. (New) The water-based drilling fluid of claim 420 wherein said fluid consists essentially of additives other than a solid bridging agent.

424. (New) The water-based drilling fluid of claim 421 wherein said fluid consists essentially of additives other than a solid bridging agent.

425. (New) The water-based drilling fluid of claim 414 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

426. (New) The water-based drilling fluid of claim 420 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

427. (New) The water-based drilling fluid of claim 424 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

428. (New) The water-based drilling fluid of claim 424 wherein said effective fluid loss control properties comprises a fluid loss of about 1 ml./30 min. or less using the standard dynamic filtration fluid loss test.

429. (New) The water based drilling fluid of claim 414 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

430. (New) The water based drilling fluid of claim 429 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

431. (New) The water-based drilling fluid of claims 424 wherein said concentration is from about 2 to about 20 vol.%.

432. (New) The water-based drilling fluid of claim 414 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about 500,000 to about 2,500,000.

433. (New) The water-based drilling fluid of claim 414 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about from about 700,000 to about 1,200,000.

434. (New) The water-based drilling fluid of claim 414 wherein said water-soluble polymer comprises xanthan polysaccharides.

435. (New) The water-based drilling fluid of claim 434 wherein said water-soluble polymer comprises xanthan polysaccharides.

436. (New) The water-based drilling fluid of claim 414 wherein said water soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000.

437. (New) The water-based drilling fluid of claim 414 wherein said water soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 600,000 to about 1,000,000.

438. (New) The water-based drilling fluid of claim 436 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

439. (New) The water-based drilling fluid of claim 437 wherein said synthetically modified starches comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

440. (New) The water-based drilling fluid of claim 414 having a density of about 7.9 lb/gal. or more.

441. (New) A water-based drilling fluid:  
an aqueous base;  
a quantity of water soluble polymer;  
an amount of surfactant in association with said water soluble polymer;  
wherein said quantity, said amount, and said association provide said water-based drilling fluid effective rheology and fluid loss control properties; and  
a concentration of about 20 vol.% or less non-toxic water emulsifiable material as an internal phase, said surfactant being effective to emulsify said water

emulsifiable material and to produce emulsion droplets having an average diameter of about 30 microns or less.

442. (New) The water-based drilling fluid of claim 441 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

443. (New) The water-based drilling fluid of claim 441 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

444. (New) The water-based drilling fluid of claim 441 wherein said surfactant comprises an alkyl ether sulfate.

445. (New) The water-based drilling fluid of claim 441 wherein said surfactant is sodium tridecyl ether sulfate.

446. (New) The water-based drilling fluid of claim 441 wherein said surfactant is effective to emulsify said water emulsifiable material and to produce emulsion droplets having an average diameter of about 20 microns or less.

447. (New) The water-based drilling fluid of claim 441 wherein said surfactant is effective to emulsify said water emulsifiable material and to produce emulsion droplets having an average diameter of about 15 microns or less.

448. (New) The water-based drilling fluid of claim 441 wherein said surfactant is effective to emulsify said water emulsifiable material and to produce emulsion droplets having an average diameter of about 5 microns or less.

449. (New) The water-based drilling fluid of claim 441 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

450. (New) The water-based drilling fluid of claim 441 wherein said concentration is from about 2 to about 20 vol.%.

451. (New) The water-based drilling fluid of claim 441 wherein said concentration is about 5 vol.% .

452. (New) The water-based drilling fluid of claim 446 wherein said concentration is about 5 vol.%.

453. (New) The water-based drilling fluid of claim 441 wherein said non-toxic water emulsifiable material is a water insoluble material selected from the group consisting of olefins, paraffins, water insoluble glycols, water insoluble esters, water insoluble Fischer-Tropsch reaction products, and combinations thereof.

454. (New) The water-based drilling fluid of claim 441 wherein said water emulsifiable material is a water insoluble material selected from the group consisting of olefins, paraffins, water insoluble glycols, and combinations thereof.

455. (New) The water-based drilling fluid of claim 446 wherein said water emulsifiable material is a water insoluble material selected from the group consisting of olefins, paraffins, water insoluble glycols, and combinations thereof.

456. (New) The water-based drilling fluid of claim 441 wherein said fluid consists essentially of additives other a solid bridging agent.

457. (New) The water-based drilling fluid of claim 446 wherein said fluid consists essentially of additives other than a solid bridging agent.

458. (New) The water-based drilling fluid of claim 452 wherein said fluid consists essentially of additives other than a solid bridging agent.

459. (New) The water-based drilling fluid of claim 441 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

460. (New) The water-based drilling fluid of claim 448 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

461. (New) The water-based drilling fluid of claim 441 wherein said effective fluid loss control properties comprises a fluid loss of about 1 ml./30 min. or less using the standard dynamic filtration fluid loss test.

462. (New) The water-based drilling fluid of claim 448 wherein said effective fluid loss control properties comprises a fluid loss of about 1 ml./30 min. or less using the standard dynamic filtration fluid loss test.

463. (New) The water-based drilling fluid of claim 441 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

464. (New) The water-based drilling fluid of claim 446 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

465. (New) The water based drilling fluid of claim 441 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

466. (New) The water based drilling fluid of claim 465 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

467. (New) The water based drilling fluid of claim 446 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

468. (New) The water based drilling fluid of claim 467 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

469. (New) The water-based drilling fluid of claim 463 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about 500,000 to about 2,500,000.

470. (New) The water-based drilling fluid of any of claims 463 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about from about 700,000 to about 1,200,000.

471. (New) The water-based drilling fluid of claim 463 wherein said water-soluble polymer comprises xanthan polysaccharides.

472. (New) The water-based drilling fluid of claim 463 wherein said water-soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000.

473. (New) The water-based drilling fluid of claim 463 wherein said water-soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 600,000 to about 1,000,000.

474. (New) The water-based drilling fluid of claim 463 wherein said synthetically modified starches comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

475. (New) The water-based drilling fluid of claim 464 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

476. (New) A water-based drilling fluid comprising:  
an aqueous base comprising a concentration of about 20 vol.% or less non-toxic water emulsifiable material as an internal phase;  
about 2 lb./bbl. or more water soluble polymer; and,

about 0.2 lb./bbl. or more surfactant in association with said water soluble polymer; wherein said water soluble polymer, said surfactant, and said association provide said water- based drilling fluid with effective rheology and fluid loss control properties.

477. (New) The water-based drilling fluid of claim 476 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

478. (New) The water-based drilling fluid of claim 476 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

479. (New) The water-based drilling fluid of claim 476 wherein said surfactant comprises an alkyl ether sulfate.

480. (New) The water-based drilling fluid of claim 476 wherein said surfactant is sodium tridecyl ether sulfate.

481. (New) The water-based drilling fluid of claim 476 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity of about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

482. (New) The water-based drilling fluid of claim 476 wherein said concentration is from about 2 to about 20 vol.%.

483. (New) The water-based drilling fluid of claim 479 wherein said concentration is from about 2 to about 20 vol.%.

484. (New) The water-based drilling fluid of claim 476 wherein said fluid consists essentially of additives other a solid bridging agent.

485. (New) The water-based drilling fluid of claim 479 wherein said fluid consists essentially of additives other than a solid bridging agent.

486. (New) The water-based drilling fluid of claim 480 wherein said fluid consists essentially of additives other than a solid bridging agent.

487. (New) The water-based drilling fluid of claim 476 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

488. (New) The water-based drilling fluid of claim 486 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

489. (New) The water-based drilling fluid of claim 476 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

490. (New) The water-based drilling fluid of claim 485 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof,

and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

491. (New) The water-based drilling fluid of claim 486 wherein said water soluble polymer is selected from the group consisting of water soluble starches and modified versions thereof, water-soluble polysaccharides and modified versions thereof, and water-soluble celluloses and modified versions thereof, and water soluble polyacrylamides and copolymers thereof, and combinations thereof.

492. (New) The water based drilling fluid of claim 476 wherein said surfactant produces a reduced of said water based drilling fluid.

493. (New) The water based drilling fluid of claim 492 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

494. (New) The water based drilling fluid of claim 486 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

495. (New) The water based drilling fluid of claim 494 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

496. (New) The water based drilling fluid of claim 491 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.

497. (New) The water based drilling fluid of claim 496 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.

498. (New) The water-based drilling fluid of claim 476 wherein said water soluble polymer comprises polymers selected from the group consisting of modified

polysaccharides having a weight average molecular weight of about 500,000 to about 2,500,000.

499. (New) The water-based drilling fluid of any of claims 476 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about from about 700,000 to about 1,200,000.

500. (New) The water-based drilling fluid of claim 476 wherein said water-soluble polymer comprises xanthan polysaccharides.

501. (New) The water-based drilling fluid of claim 486 wherein said water-soluble polymer comprises xanthan polysaccharides.

502. (New) The water-based drilling fluid of claim 476 wherein said water-soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000.

503. (New) The water-based drilling fluid of claim 476 wherein said water-soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 600,000 to about 1,000,000.

504. (New) The water-based drilling fluid of claim 502 wherein said synthetically modified starches comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

505. (New) The water-based drilling fluid of claim 503 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

506. (New) The water-based drilling fluid of claim 476 wherein said water soluble polymer comprises about 50/50 wt.% modified xanthan polysaccharide and synthetically modified starch.

507. (New) The water-based drilling fluid of claim 486 wherein said water soluble polymer comprises about 50/50 wt.% modified xanthan polysaccharide and synthetically modified starch.

508. (New) A water-based drilling fluid comprising:  
an aqueous base fluid;  
a quantity of water soluble polymer; and,  
an amount of from about 0.2 lb/bbl to about 4 lb/bbl surfactant in association  
with said water soluble polymer;  
wherein said quantity, said amount, and said association provide said water-based  
drilling fluid with effective rheology and fluid loss control properties.

509. (New) The water-based drilling fluid of claim 508 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

1           510. (New) The water-based drilling fluid of claim 508 further comprising a  
2 concentration of about 20 vol.% or less non-toxic water emulsifiable material as an  
3 internal phase, said quantity being sufficient to provide effective lubrication properties to  
4 said drilling fluid.

5           511. (New) The water-based drilling fluid of claim 509 further comprising a  
6 concentration of about 20 vol.% or less non-toxic water emulsifiable material as an  
7 internal phase, said quantity being sufficient to provide effective lubrication properties to  
8 said drilling fluid.

9           512. (New) The water-based drilling fluid of claim 508 wherein said fluid  
10 consists essentially of additives other than a solid bridging agent.

1           513. (New) The water-based drilling fluid of claim 510 wherein said fluid  
2 consists essentially of additives other than a solid bridging agent.

1           514. (New) The water-based drilling fluid of claim 511 wherein said fluid  
2 consists essentially of additives other than a solid bridging agent.

1           515. (New) The water-based drilling fluid of claim 514 wherein said water-  
2 soluble polymer comprises xanthan polysaccharides.

1           516. (New) A water-based drilling fluid comprising:  
2           an aqueous base fluid;  
3           a quantity of about 2 lb/bbl. or more of water soluble polymer;  
4           an amount of surfactant in association with said water soluble polymer;  
5           wherein said quantity, said amount, and said association provide said water- based  
6           drilling fluid effective rheology and fluid loss control properties; and

7           a concentration of about 20 vol .% or less non-toxic water emulsifiable material as  
8           an internal phase, said surfactant being effective to emulsify said water  
9           emulsifiable material and to produce emulsion droplets having an average  
10          diameter of about 30 microns or less.

517. (New) The water-based drilling fluid of claim 516 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

518. (New) The water-based drilling fluid of claim 516 wherein said fluid consists essentially of additives other than a solid bridging agent.

519. (New) The water-based drilling fluid of claim 517 wherein said fluid consists essentially of additives other than a solid bridging agent.

520. (New) The water-based drilling fluid of claim 516 wherein said water-soluble polymer comprises xanthan polysaccharides.

521. (New) The water-based drilling fluid of claim 518 wherein said water-soluble polymer comprises xanthan polysaccharides.

522. (New) The water-based drilling fluid of claim 519 wherein said water-soluble polymer comprises xanthan polysaccharides.

523. (New) A water-based drilling fluid comprising:  
an aqueous base comprising about 20 vol.% or less non-toxic water emulsifiable material;  
a quantity of water soluble polymer; and,

an amount of from about 0.2 lb/bbl to about 4 lb/bbl surfactant in association with said water soluble polymer;

wherein said quantity, said amount, and said association provide said water-based drilling fluid with effective rheology and fluid loss control properties.

524. (New) The water-based drilling fluid of claim 523 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

525. (New) The water-based drilling fluid of claim 523 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

526. (New) The water-based drilling fluid of claim 523 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

527. (New) The water-based drilling fluid of claim 523 wherein said surfactant comprises an alkyl ether sulfate.

528. (New) The water-based drilling fluid of claim 524 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

529. (New) The water-based drilling fluid of claim 524 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

530. (New) The water-based drilling fluid of claim 524 wherein said surfactant comprises an alkyl ether sulfate.

531. (New) The water-based drilling fluid of claim 523 wherein said fluid consists essentially of additives other than a solid bridging agent.

532. (New) The water-based drilling fluid of claim 525 wherein said fluid consists essentially of additives other than a solid bridging agent.

533. (New) The water-based drilling fluid of claim 528 wherein said fluid consists essentially of additives other than a solid bridging agent.

534. (New) The water-based drilling fluid of claim 531 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

535. (New) The water-based drilling fluid of claim 532 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

536. (New) The water-based drilling fluid of claim 533 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

537. (New) The water-based drilling fluid of claim 533 wherein said effective fluid loss control properties comprises a fluid loss of about 1 ml./30 min. or less using the standard dynamic filtration fluid loss test.

538. (New) The water based drilling fluid of claim 531 wherein said surfactant produces a reduced surface tension of said water based drilling fluid.
539. (New) The water based drilling fluid of claim 538 wherein said reduced surface tension of said water based drilling fluid is from about 25 to about 40 nN/m.
540. (New) The water-based drilling fluid of claims 523 wherein said concentration is from about 2 to about 20 vol.%.
541. (New) The water-based drilling fluid of claim 523 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about 500,000 to about 2,500,000.
542. (New) The water-based drilling fluid of claim 523 wherein said water soluble polymer comprises polymers selected from the group consisting of modified polysaccharides having a weight average molecular weight of about 700,000 to about 1,200,000.
543. (New) The water-based drilling fluid of claim 523 wherein said water-soluble polymer comprises xanthan polysaccharides.
544. (New) The water-based drilling fluid of claim 533 wherein said water-soluble polymer comprises xanthan polysaccharides.
545. (New) The water-based drilling fluid of claim 523 wherein said water soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000.

546. (New) The water-based drilling fluid of claim 523 wherein said water soluble polymer comprises polymers selected from the group consisting of synthetically modified starches having a weight average molecular weight of from about 600,000 to about 1,000,000.

547. (New) The water-based drilling fluid of claim 545 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

548. (New) The water-based drilling fluid of claim 546 wherein said synthetically modified starches comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

549. (New) The water-based drilling fluid of claim 531 has a density of about 7.9 lb/gal. or more.

550. (New) A water-based drilling fluid comprising:  
an aqueous base;  
a quantity of water soluble polymer selected from the group consisting of modified polysaccharides having a weight average molecular weight of about from about 500,000 to about 2,500,000; and,  
an amount of surfactant in association with said water soluble polymer;  
wherein said quantity, said amount, and said association provide said water based drilling fluid with effective rheology and fluid loss control properties.

551. (New) The water-based drilling fluid of claim 550 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

552. (New) The water-based drilling fluid of claim 550 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

553. (New) The water-based drilling fluid of claim 550 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

554. (New) The water-based drilling fluid of claim 550 wherein said surfactant comprises an alkyl ether sulfate.

555. (New) The water-based drilling fluid of claim 550 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

556. (New) The water-based drilling fluid of claim 551 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

557. (New) The water-based drilling fluid of claim 552 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

558. (New) The water-based drilling fluid of claim 553 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

559. (New) The water-based drilling fluid of claim 554 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

560. (New) The water-based drilling fluid of claim 550 wherein said fluid consists essentially of additives other than a solid bridging agent.

561. (New) The water-based drilling fluid of claim 555 wherein said fluid consists essentially of additives other than a solid bridging agent.

562. (New) The water-based drilling fluid of claim 556 wherein said fluid consists essentially of additives other than a solid bridging agent.

563. (New) The water-based drilling fluid of claim 557 wherein said fluid consists essentially of additives other than a solid bridging agent.

564. (New) The water-based drilling fluid of claim 558 wherein said fluid consists essentially of additives other than a solid bridging agent.

565. (New) The water-based drilling fluid of claim 559 wherein said fluid consists essentially of additives other than a solid bridging agent.

566. (New) The water-based drilling fluid of claim 550 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

567. (New) The water-based drilling fluid of claim 560 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

568. (New) The water-based drilling fluid of claim 561 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

569. (New) The water-based drilling fluid of claim 550 wherein said effective fluid loss control properties comprises a fluid loss of about 1 ml./30 min. or less using the standard dynamic filtration fluid loss test.

570. (New) The water-based drilling fluid of claims 550 wherein said concentration is from about 2 to about 20 vol.%.

571. (New) The water-based drilling fluid of claims 555 wherein said concentration is from about 2 to about 20 vol.%.

572. (New) The water-based drilling fluid of claims 560 wherein said concentration is from about 2 to about 20 vol.%.

573. (New) The water-based drilling fluid of claims 561 wherein said concentration is from about 2 to about 20 vol.%.

574. (New) The water-based drilling fluid of claims 566 wherein said concentration is from about 2 to about 20 vol.%.

575. (New) The water-based drilling fluid of claim 572 having a density of about 7.9 lb/gal. or more.

576. (New) A water-based drilling fluid comprising:

an aqueous base;

a quantity of water soluble polymer selected from the group consisting of

synthetically modified starches having a weight average molecular weight of from about 200,000 to about 2,500,000; and,

an amount of surfactant in association with said water soluble polymer;

wherein said quantity, said amount, and said association provide said water based drilling fluid with effective rheology and fluid loss control properties.

577. (New) The water-based drilling fluid of claim 576 wherein said effective rheology and fluid loss control properties comprise a low shear rate viscosity comprising about 70,000 cP or more upon exposure to 0.3 rpm, measured with a Brookfield viscometer at 75 °F.

578. (New) The water-based drilling fluid of claim 576 wherein said surfactant is selected from the group consisting of alkyl sulfates, alkyl ether sulfates, alkyl sulfonates, ethoxylated esters, ethoxylated glycoside esters, alcohol ethers, and phosphated esters comprising about 8 to about 18 carbon atoms, alkali metal salts thereof, and combinations thereof.

579. (New) The water-based drilling fluid of claim 576 wherein said surfactant is selected from the group consisting of alkyl sulfates and alkyl ether sulfates.

580. (New) The water-based drilling fluid of claim 576 wherein said surfactant comprises an alkyl ether sulfate.

581. (New) The water-based drilling fluid of claim 576 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

582. (New) The water-based drilling fluid of claim 577 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

583. (New) The water-based drilling fluid of claim 578 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

584. (New) The water-based drilling fluid of claim 579 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

585. (New) The water-based drilling fluid of claim 580 further comprising a concentration of non-toxic water emulsifiable material as an internal phase, said quantity being sufficient to provide effective lubrication properties to said drilling fluid.

586. (New) The water-based drilling fluid of claim 576 wherein said fluid consists essentially of additives other than a solid bridging agent.

587. (New) The water-based drilling fluid of claim 581 wherein said fluid consists essentially of additives other than a solid bridging agent.

588. (New) The water-based drilling fluid of claim 582 wherein said fluid consists essentially of additives other than a solid bridging agent.

589. (New) The water-based drilling fluid of claim 583 wherein said fluid consists essentially of additives other than a solid bridging agent.

590. (New) The water-based drilling fluid of claim 584 wherein said fluid consists essentially of additives other than a solid bridging agent.

591. (New) The water-based drilling fluid of claim 585 wherein said fluid consists essentially of additives other than a solid bridging agent.

592. (New) The water-based drilling fluid of claim 576 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

593. (New) The water-based drilling fluid of claim 581 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

594. (New) The water-based drilling fluid of claim 586 wherein said effective fluid loss control properties comprises a fluid loss of about 5 ml./30 min. or less using the standard dynamic filtration fluid loss test.

595. (New) The water-based drilling fluid of claim 586 wherein said effective fluid loss control properties comprises a fluid loss of about 1 ml./30 min. or less using the standard dynamic filtration fluid loss test.

596. (New) The water-based drilling fluid of claims 576 wherein said concentration is from about 2 to about 20 vol.%.

597. (New) The water-based drilling fluid of claims 581 wherein said concentration is from about 2 to about 20 vol.%.

598. (New) The water-based drilling fluid of claims 587 wherein said concentration is from about 2 to about 20 vol.%.

599. (New) The water-based drilling fluid of claims 592 wherein said concentration is from about 2 to about 20 vol.%.

600. (New) The water-based drilling fluid of claim 576 wherein said synthetically modified polysaccharides comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

601. (New) The water-based drilling fluid of claim 587 wherein said synthetically modified starches comprise a functional group selected from the group consisting of a carboxymethyl group, a propylene glycol group, and an epichlorohydrin group.

602. (New) The water-based drilling fluid of claim 587 having a density of about 7.9 lb/gal. or more.